UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,561	01/29/2004	Asako Koike	ASAM.0101	4049

7590 06/29/2007	**EXAMINER**
REED SMITH LLP	PADMANABHAN, KAVITA
3110 Fairview Park Drive, Suite 1400	
Falls Church, VA 22042	

ART UNIT	PAPER NUMBER
2161	

MAIL DATE	DELIVERY MODE
06/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 June 2007_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-17_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-17_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _29 January 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Status of Claims

1.   Claims 1-17 are pending.

2.   Claims 1, 5, 9, and 12-16 have been amended.

3.   Claims 1-17 are rejected.

Continued Examination Under 37 CFR 1.114

4.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 5/18/07 has been entered.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making
> and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it
> pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode
> contemplated by the inventor of carrying out his invention.

6.   **Claims 1-17** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with

the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed

invention.

With respect to **claims 1 and 16**, the limitation "the table including a degree of a relationship between *each* two of the terms belonging to the third category" does not appear to be described in the applicant's original specification. Specifically, while a degree of association between terms appears to be supported, a degree of association between each two of the terms does not.

With respect to **claim 11**, the limitation "other *external* information about said terms" does not appear to be described in the applicant's original specification. Applicant has pointed to Fig. 12 as containing support for this limitation, however the examiner respectfully asserts that the subject matter described by Fig. 12 does not appear to be commensurate in scope with this limitation.

With respect to **claim 12**, the limitation "upper concept terms displayed to substitute for associated ones of said plurality of terms" does not appear to be described in the applicant's original specification. Specifically, displaying upper concept terms *to substitute for associated ones of said plurality of terms* does not appear to be supported. Furthermore, the applicant has not indicated which portions of the original specification might contain such support.

7.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8.   **Claim 12** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "upper concept terms displayed to substitute for associated ones of said plurality of terms." It is unclear what is meant by this limitation and how the upper concept terms are displayed to substitute for associated ones of said plurality of terms.

The examiner will apply prior art to this claim as best understood in light of the above rejection.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10.   **Claims 1-5, 7-9, 11, and 16-17** are rejected under 35 U.S.C. 102(b) as being anticipated by **Miller et al.** (US 2002/0091678, hereinafter "Miller").

In regards to **claim 1, Miller** teaches a network drawing system, comprising:

–   a first input unit designating a first query having terms belonging to a first category **(Miller; Figure 7, reference character S1; par [0052] –** *"the user enters a set of query objects"***)**;

–   a second input unit designating a second query having terms belonging to a second category **(Miller; Figure 7, reference character S1; par [0052] –** *"the user enters a set of query objects"* **– plural means at least a first and a second query are entered and**

the different queries constitute different categories in that each query clearly

belongs to its own category at the least);

– a data storage device storing terms belonging to a third category in a form of a table, the

terms of the third category comprising terms from the first category and the second

category **(Miller; par [0045], lines 8-12; par [0054], lines 10-12 – "The display may**

include information such as author, frequency tables for occurrence of selected

terms in the query, probable status for the object corresponding to the point 54 vis-

a-vis the query 33 occurring within the object, confidence factor and the like." –

teaches tables including terms, probable statuses, confidence factors, etc. and the

confidence factors are indicators of a degree of an association);

– a calculation device which calculates a relationship between the input first query and

second query through a plurality of terms using the table stored in said data storage

device, the table including a degree of association of a relationship between each two of

the terms belonging to the third category **(Miller; par [0054], lines 10-14; par [0055] –**

"feature vectors have already been calculated", "determines relationships between

each of the data objects in the database and the query objects" – relationships are

determined via calculations); and

– a display device displaying on a screen a network of terms connecting the first query and

the second query through a chain of the plurality of terms based on a result of calculation

made by said calculation device **(Miller; par [0056], Figs. 3 and 4 – *"the processor 20***

projects the relationships calculated" – the relationships are displayed through a

plurality of the terms used in the queries).

In regards to **claim 2**, **Miller** teaches the network drawing system according to claim 1,

further comprising

- a third input unit for designating a drawing condition **(Miller; par [0043]; Fig. 7, steps**

  S12, S13, S15); and

- said network being displayed according to said drawing condition .**(Miller; par [0043];**

  Fig. 4).

In regards to **claim 3**, **Miller** teaches the network drawing system according to claim 1,

wherein said data storage device further stores attributes of said terms **(Miller; pars [0031]-**

[0032], pars [0061] - [0062]).

In regards to **claim 4**, **Miller** teaches the network drawing system according to claim 1,

wherein at least one of said first query and said second query includes a plurality of query terms

(Miller; par [0032], lines 1-5).

In regards to **claim 5**, **Miller** teaches the network drawing system according to claim 1,

wherein among routes connecting said first query and said second query, a route having the

highest degree of a relationship between the first and second category terms is displayed by a

highlight line **(Miller; Figs. 3, 4, and 6).**

In regards to **claim 7, Miller** teaches the network drawing system according to claim 1, wherein the relationship between said terms is extracted according to co-occurrence between terms or phrase patterns **(Miller; par [0031], lines 1-6; par [0032], lines 5-8; par [0045], lines 6-12)**.

In regards to **claim 8, Miller** teaches the network drawing system according to claim 2, wherein the network of the terms is re-displayed interactively by changing the setting of said third input unit **(Miller; par [0043]; par [0047]; par [0059]; Fig. 7, steps S12, S13, S15)**.

In regards to **claim 9, Miller** teaches the network drawing system according to claim 2, wherein the connection between the terms or editing for addition or deletion of a term itself can be conducted interactively by changing the setting of said third input unit **(Miller; par [0043]; par [0047]; Fig. 7, steps S12, S13, S15)**.

In regards to **claim 11, Miller** teaches the network drawing system according to claim 1, wherein the relationship between said terms is displayed on the screen at the same time with other external information about said terms **(Miller; Figs. 3, 4, and 6)**.

Claim 16 is rejected using the same citations provided for claim 1.

In regards to **claim 17, Miller** teaches the network drawing method according to claim 16, wherein said data storage device is accessed through an Internet **(Miller; par [0026]; Fig. 2)**.

Claim Rejections - 35 USC § 103

11.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13.   **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller in view of

Murray et al.** (US 6,876,930, hereinafter "Murray").

        In regards to **claim 10**, **Miller** teaches the network drawing system according to claim 1.

Miller does not expressly teach a synonym dictionary for converting at least one query input

through said first input unit or said second input unit into a standardized term. **Murray** teaches

querying a database to identify synonyms for genes that are being queried and then proceeding

with the search based on the input gene and its identified synonyms **(Fig. 10, steps 300-320)**. It

would have been obvious to one of ordinary skill in the art at the time of the applicant's

invention to implement the system of Miller by using a synonym dictionary to convert an input

term into its synonyms, such as that taught by Murray, in order to be able to more accurately

depict relationships between terms by using both the input term and its identified synonyms

(Murray; col. 28, lines 1-6).

14.   **Claims 6 and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Miller in view of Chamberlin et al. (US 6,941,317, hereinafter "Chamberlin").

        In regards to **claim 6, Miller** teaches the network drawing system according to claim 1.

Miller does not expressly teach said first category being at least one of a disease name, a

symptom, a protein name, a gene name, a compound name, a gene function and a protein's

function; and said second category being at least one of the compound name, the protein name

and the gene name. **Chamberlin** teaches entering queries wherein the keywords are amino acid

sequences, gene names, etc. **(Chamberlin; col. 15, line 52 – col. 16, line 28)**, in order to

perform searches, browse sequences, and examine and display relationships between genes

(Chamberlin; col. 14, lines 9-19). It would have been obvious to one of ordinary skill in the art

at the time of the applicant's invention to implement the system of Miller using the biological

queries of Chamberlin in order to be able to query databases containing biological data and

display relationships between such data **(Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19).**

        In regards to **claim 12, Miller** teaches the network drawing system according to claim 1.

Miller does not expressly teach said plurality of terms displayed to connect the first and second

query includes upper concept terms displayed to substitute for associated ones of said plurality of terms. **Chamberlin** teaches displaying items in a hierarchical tree **(Chamberlin; Fig. 15)**. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of Miller using the hierarchical display feature of Chamberlin, whereby if terms have a hierarchical relationship, the system of Miller would indicate the hierarchy including upper concept terms in the graphical representation of the network in order to display relationships between biological data **(Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19)**.

In regards to **claim 13**, **Miller** teaches the network drawing system according to claim 1. **Miller** also teaches displaying information associated with a term on the display **(Miller; par [0045], line 1 – par [0046], line 5; par [0061] – par [0062])**. Miller does not expressly teach said second category being a gene name, and said gene name being displayed along a horizontal axis of said screen, and a lod score generated from a linkage analysis of said result of calculation made by said calculation device being displayed for each gene of the horizontal axis or together with information on a chromosome position. **Chamberlin** teaches entering queries wherein the keywords are amino acid sequences, gene names, etc. **(Chamberlin; col. 15, line 52 – col. 16, line 28)**, a display depicting relationships between sequences **(Chamberlin; Fig. 15)**, and displaying a "log odds score" **(Chamberlin; Fig. 11; col. 16, lines 4-10)**. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of Miller with the biological data of Chamberlin, whereby the second query term is of the gene name category, and the gene name and log odds score information is displayed with the

graphical representation of the network in order to display information about and relationships between biological data **(Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19).**

In regards to **claim 14**, **Miller** teaches the network drawing system according to claim 1. Miller does not expressly teach the relationship between said terms being displayed together with a result of gene clustering based on gene attributes, wherein the first query or second query is at least a gene with attributes. **Chamberlin** teaches displaying the relationships between genes and protein sequences and also teaches displaying families of sequences **(Chamberlin; Fig. 11; Fig. 15)**, which constitutes clustering or grouping. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to implement the system of Miller using the display feature of Chamberlin, whereby relationships between terms would take into account familial and evolutionary relatedness, in order to display relationships between biological data **(Chamberlin; col. 1, lines 25-32; col. 14, lines 9-19).**

In regards to **claim 15**, **Miller** teaches the network drawing system according to claim 1. **Miller** also teaches highlighting a route connecting different items, i.e. terms that do not match with each other **(Miller; Fig. 4, Fig. 6)**. Miller does not expressly teach when a result of displaying the network is not consistent with a result of the gene clustering, a route connecting the first query and the second query from the result of said calculation which are from a result of mis-clustering is displayed by a highlight line. **Chamberlin** teaches displaying the relationships between genes and protein sequences and also teaches displaying families of sequences **(Chamberlin; Fig. 11; Fig. 15)**, which constitutes clustering or grouping. It would have been

obvious to one of ordinary skill in the art at the time of the applicant's invention to implement

the system of Miller using the biological data of Chamberlin, whereby when there is not an exact

match found because of inadequate clustering, a nearest match could be highlighted on the

display to indicate relationships between biological data **(Miller, par [0049]; Chamberlin, col.**

1, lines 25-32, col. 14, lines 9-19).

Response to Amendment

15.   Applicant's amendments filed 5/18/07 with respect to the objections to the specification

have been fully considered. The corresponding objections have been withdrawn accordingly.

16.   Applicant's amendment filed 5/18/07 with respect to the objections to the claims have

been fully considered. The corresponding objections have been withdrawn accordingly.

17.   Applicant's amendments filed 5/18/07 with respect to the 35 U.S.C. 112, 2nd paragraph

rejections have been fully considered. The corresponding rejections have been withdrawn

accordingly.

Response to Arguments

18.   Applicant's arguments filed 5/18/07 with respect to the 35 U.S.C. 112, 1st paragraph

enablement rejections have been fully considered. The corresponding rejections have been

withdrawn accordingly.

19.   Applicant's arguments filed 5/18/07 with respect to the 35 U.S.C. 112, 1st paragraph

written description rejections have been fully considered. While certain rejections have been

withdrawn, rejections of claims 1, 11, 16, and the claims that depend therefrom have been

maintained, as explained in the appropriate section above.

20.   Applicant's arguments filed 5/18/07 with respect to the rejections of the claims have been

fully considered but they are not persuasive.

Applicant argues at page 14 of applicant's remarks that Miller does not teach storing

terms belonging to a third category in a form of a table, the terms of the third category

comprising terms from the first category and the second category and the table including a

degree of a relationship between each two of the terms belonging to the third category. The

examiner respectfully disagrees. The examiner asserts that Miller clearly teaches tables

including terms from the queries, probable statuses, confidence factors, etc. and the confidence

factors are indicators of a degree of an association (Miller; par [0045], lines 8-12).

Applicant also argues at page 14 of applicant's remarks that Miller does not teach

calculating a relationship between the input first query and second query through a plurality of

terms. The examiner respectfully disagrees. The examiner asserts that Miller clearly teaches

calculating a relationship between the input first query and second query through a plurality of

terms (Miller; par [0054], lines 10-14; par [0055]) in that Miller teaches that relationships are

calculated and that these calculations are based in part on terms of the queries.

Applicant also argues at page 14 of applicant's remarks that Miller does not teach linking

the first query and the second query through a chain of plurality of terms based on the result of

the calculations. The examiner respectfully disagrees and asserts that Miller clearly meets this

limitation by displaying relationships through a plurality of the terms used in the queries (Miller;

par [0056], Figs. 3 and 4).

Conclusion

21.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to **Kavita Padmanabhan** whose telephone number is **571-272-**

8352. The examiner can normally be reached on Monday-Friday, 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kavita Padmanabhan   June 24, 2007
Assistant Examiner
AU 2161